

What is Claimed:

1 1. A memory to contain program and system information protocol (PSIP) data
2 about digital television (DTV) content, the memory being organized to contain a data
3 structure comprising at least one of
4 an information type descriptor segment and
5 an extended information descriptor segment
6 each of which characterize extra information associated with a virtual channel or an
7 event in a DTV data stream.

1 2. The data-structured memory of claim 1, wherein each of said information type
2 descriptor segment and said an extended information descriptor segment includes:
3 a descriptor tag segment;
4 a descriptor length segment; and
5 an information type identification segment.

1 3. The data-structured memory of claim 2, wherein said descriptor tag segment
2 has a value of 0xC9 for said information type descriptor segment and a value of
3 0xC8 for said an extended information descriptor segment .

1 4. The data-structured memory of claim 2, wherein said descriptor length
2 segment indicates a remaining length of said information type descriptor segment as
3 determined by said information type identification segment, said information
4 description length segment and said information description segment.

1 5. The data-structured memory of claim 2, wherein said information type
2 identification segment contains a code that characterizes said information associated
3 with a virtual channel or an event in a DTV data stream as one of:

- 4 a GIF-formatted image file;
- 5 a JPEG-formatted image file;
- 6 a TIFF-formatted image file;
- 7 an ASCII text file;
- 8 an HTML-formatted text file;

an XML-formatted text file;
a basic audio formatted file having a .au file extension;
an MPEG-formatted audio file;
a WAV-formatted audio file;
an MPEG-formatted video file;
a Quicktime-formatted video file;
an AVI-formatted video file; and
a user-defined formatted file.

6. The data-structured memory of claim 2, wherein said information type descriptor segment further includes:

an information description length segment; and
an information description text segment.

7. The data-structured memory of claim 6, wherein said information description length segment identifies a length of said information description text segment.

8. The data-structured memory of claim 6, wherein said information description text segment includes text that characterizes said information associated with a virtual channel or an event in a DTV data stream.

9. The data-structured memory of claim 8, wherein said information type identification segment includes a code description corresponding to said text description in said information description text segment.

10. The data-structured memory of claim 2, wherein said extended information descriptor segment further includes at least two of:

an information expected usage segment;
an information location length segment; and
an information location text segment.

11. The data-structured memory of claim 10, wherein said information expected usage segment includes at least one of:

3 a first field that describes a usage of said extra information anticipated by a
4 creator of said extended information descriptor segment;

5 a second field that describes said extra information as being an advertisement
6 or not; and

7 a third field that describes a location on a display screen where said creator of
8 said extended information descriptor segment anticipates that a representation of
9 said extra information should be positioned.

1 12. The data-structured memory of claim 11, wherein said first field describes said
2 extra information as one of:

3 undefined so as to have no expected usage;

4 extended event, extended programming guide (EPG) information that is to be
5 displayed during an EPG display when an event is selected;

6 extended event selected information that is to be displayed when an event is
7 selected;

8 extended channel EPG information that is to be displayed during an EPG
9 display when a channel is selected;

10 extended channel selected information that is to be displayed when a channel
11 is selected; and

12 user-defined information.

1 13. The data-structured memory of claim 10, wherein said information location
2 identifies a remaining length of said extended information descriptor segment as
3 determined by said information location text segment.

1 14. The data-structured memory of claim 10, wherein said information location
2 text segment represents a string of text that is interpreted as a universal resource
3 locator (URL).

1 15. The data-structured memory of claim 14, wherein said URL is a reference to a
2 data program within said DTV data stream or data external to said DTV data stream.

1 16. The data-structured memory of claim 15, wherein the external data is from the
2 world wide web (WWW).

1 17. The data-structured memory of claim 15, wherein said data program within
2 said DTV data stream is referenced with a path beginning as

3 dtv:/

4 or, said data from the world wide web (WWW) is referenced with a path
5 beginning as

6 http://

7 or

8 http://www.

1 18. The data-structured memory of claim 1, further comprising a link between said
2 an information type descriptor and at least one of a virtual channel table (VCT) and
3 an event information table (EIT).

1 19. The data-structured memory of claim 1, further comprising a link between said
2 extended information descriptor segment and at least one of a virtual channel table
3 (VCT) and an event information table (EIT).

1 20. The data-structured memory of claim 11, wherein said first field describes said
2 extra information as being at least one of:

3 intended to be displayed during a displaying of an EPG; and

4 intended to be displayed independently of a displaying of an EPG.

1 21. The data-structured memory of claim 11, wherein said third field describes
2 said location as being one of:

3 undefined so as to have no expected location;

4 in the background relative to information of greater priority on said display
5 screen;

6 the upper left quadrant of said display screen;

7 the upper right quadrant of said display screen;

8 the lower left quadrant of said display screen; and

9 in the lower right quadrant of said display screen;

1 22. A method to generate program and system information protocol (PSIP) data
2 about digital television (DTV) content, said PSIP data including at least one data
3 structure as defined in claim 1.

1 23. A program and system information protocol (PSIP) generator to generate
2 PSIP data about digital television (DTV) content, said PSIP data including at least
3 one data structure as defined in claim 1.

1 24. The PSIP generator of claim 23, wherein said PSIP generator is embodied on
2 a computer running software.

1 25. The PSIP generator of claim 24, wherein said software is written in the
2 language Java.

1 26. A computer-readable article of manufacture having embodied thereon
2 software to generate program and system information protocol (PSIP) data about
3 digital television (DTV) content, said PSIP data including at least one data structure
4 as defined in claim 1.

1 27. A method to generate an extended programming guide (EPG) display
2 about content in a digital television (DTV) stream of data packets, said method
3 comprising:
4 receiving said DTV stream of data packets, said stream containing program
5 and system information protocol (PSIP) data;
6 recognizing at least one data structure, as defined in claim 1, within said PSIP
7 data; and
8 generating said EPG display as a function of said at least one data structure.

1 28. A digital television (DTV) receiver embodying the method of claim 27.

1 29. The DTV receiver of claim 28, wherein at least part of said DTV receiver is
2 embodied on a computer running software.

1 30. The DTV receiver of claim 29, wherein said software is written in the language
2 Java.

1 31. A computer-readable article of manufacture having embodied thereon
2 software to perform the method of claim 27.

1 32. A digital television (DTV) bit stream containing program and system
2 information protocol (PSIP) data describing content of said DTV bit stream, the PSIP
3 data being organized to contain a data structure comprising at least one of
4 an information type descriptor segment and
5 an extended information descriptor segment
6 each of which characterize extra information associated with a virtual channel or an
7 event in a DTV bit stream.